

MCF 3M Quadratic Opener

A firecracker is fired from the ground. The height of the firecracker at a given time is modeled by the function $h(t) = -5t^2 + 50t$ where $h(t)$ is the height in metres and t is the time in seconds. When will the firecracker reach 45m?

Jun 8-7:33 AM

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$45 = -5t^2 + 50t$
 $0 = -5t^2 + 50t - 45$
 $0 = 5t^2 - 50t + 45$
 $a = 5$
 $b = -50$
 $c = 45$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$
$$\frac{-(-50) \pm \sqrt{(-50)^2 - 4(5)(45)}}{2(5)}$$
$$\frac{+50 \pm \sqrt{2500 - 900}}{10}$$
$$\frac{+50 \pm \sqrt{1600}}{10}$$
$$\frac{+50 \pm 40}{10}$$
$$\frac{+50+40}{10} = \frac{90}{10} = 9$$
$$\frac{+50-40}{10} = \frac{10}{10} = 1$$

A firecracker reaches 45m after 1 sec and on the way down at 9 sec.

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